5978160A

United States Patent [19]

Koiwai et al.

[11] Patent Number: 5,978,160

[45] Date of Patent: Nov. 2, 1999

[54] **LENS BARREL HAVING A FLARE DIAPHRAGM WHICH CAN ADVANCE INTO AND RETREAT FROM THE OPTICAL PATH TO ELIMINATE DELETERIOUS LIGHT RESULTING FROM MOVEMENT OF THE LENS**

[75] Inventors: **Tamotsu Koiwai**, Akiruno; **Tatsuya Suzuki**, Tokyo, both of Japan

[73] Assignee: **Olympus Optical Co., Ltd.**, Tokyo, Japan

[21] Appl. No.: **08/979,642**

[22] Filed: **Nov. 26, 1997**

[30] **Foreign Application Priority Data**

Nov. 28, 1996 [JP] Japan H8-326822

[51] **Int. Cl.**[6] **G02B 7/02**; G02B 15/14; G02B 9/00

[52] **U.S. Cl.** **359/822**; 359/704; 359/739; 359/740

[58] **Field of Search** 359/822, 704, 359/739, 740

[56] **References Cited**

U.S. PATENT DOCUMENTS

5,373,397	12/1994	Satoh	359/694
5,376,983	12/1994	Yamazaki	354/195.12
5,392,160	2/1995	Satoh	359/695

FOREIGN PATENT DOCUMENTS

60-164414	10/1985	Japan .
63-160520	10/1985	Japan .

Primary Examiner—Georgia Epps
Assistant Examiner—Michael A. Lucas
Attorney, Agent, or Firm—Louis Weinstein

[57] **ABSTRACT**

In a lens barrel, a flare diaphragm is disposed on an optical path of lenses or in the vicinity thereof such that the flare diaphragm can advance into and retreat from the optical path for cutting deleterious light corresponding to the lenses moving in the direction of the optical axis. This lens barrel can reliably cut deleterious light flux in a simple structure.

23 Claims, 15 Drawing Sheets